

# IFORS

International Federation of Operational Research Societies

NEWS

## What's Inside

### Editorial

- 1 Message from the President
- 1 2014 Panorama and Snapshots of 2015
- 2 "Tout ou rien!"

### Conferences

- 3 27th EURO Conference Ready to Welcome Participants in Glasgow
- 3 MCDA WG Recognizes B. Roy's Work
- 3 BOS2014 Reveals Multiple Facets
- 4 MCDA Group Takes A Close Look at Agricultural Development and the Rural Economy
- 4 APORS 2015 Tweets

### Summer School

- 4 ELAVIO Caps 19th Year of Service to Young OR Professionals

### Book Review

- 5 On the Inside Track of Transport Modelling

### Editorial Box

### Tutorial

- 7 Metaheuristics – the Metaphor Exposed

### OR Impact

- 8 Transforming Hospital Emergency Department Work Flow and Patient Care

### OR for Development

- 10 Call for ICORD Sri Lanka Papers
- 11 IFORS Supports ORPA Conference in Algeria

### Pro Bono OR

- 11 Addressing Loneliness in Rural North Yorkshire

### OR Society in Focus

- 13 LitORS: Successfully Collaborating with the Global Community

### AC Reports

- 14 President
- 14 Immediate Past President
- 15 Treasurer
- 15 Vice President at Large
- 16 VP Representing ALIO, Education Initiatives
- 17 VP Representing APORS, IDL
- 18 VP Representing EURO, Meetings
- 19 VP Representing NORAM
- 19 Publications
- 20 IFORS News and Website

## Message from the President

IFORS is deeply saddened and shocked by the many lives lost and the widespread damage caused by the powerful earthquake that hit Nepal. We realize that it took friends, families and their livelihoods leaving everyone in tears, sorrow and despair.

On behalf of all members of IFORS, I would like to convey my deepest condolences and sympathies, particularly to the families of the victims and all those affected by this massive disaster, which is still unfolding. Our thoughts and prayers are with our ORSN members, colleagues, friends, and the people of Nepal. 🌐

- Nelson Maculan



## From the Editor

## 2014 Panorama and Snapshots of 2015

Elise del Rosario <elise.del.rosario@stepforward.ph>

This June edition of the IFORS News gives us an overview of how the IFORS community performed in 2014. Going through the Annual Report, one cannot help but think about the collective hard work that went into the various activities of the global OR players to keep the discipline not only visible but also vibrant.

The crowning glory for 2014 was the Barcelona Triennial conference, which our outgoing Treasurer has proclaimed as a scientific and financial success. Of course, there were numerous other conferences around the world that happened in 2014, as one would glean from the regional reports. For 2015, we read about conferences in Sri Lanka, Glasgow Greece, Poland, Algiers and France. And yes, we do have a French title for one article where our Immediate Past President brings a light touch to his editorial on the importance of continuing education for OR professionals, and thus, the relevance of the IFORS ITL project.

As part of this continuing education, a lot of tutorials were offered during the traditional summer school, as you will read in the ELAVIO article. A brief tutorial on Metaheuristics is included here as well. Our book review also mentions new methodologies for transport modelling. How OR has been applied in the health sector – to improve the efficiencies of hospitals and volunteers – are in the Impact and Pro Bono sections, respectively.

You will also see an expanded list of IFORS correspondents in our editorial box. If you have not yet forwarded your representatives' names to the IFORS News (editor@ifors.org), please do so now! They have the important task of making sure others know about your society activities. Our correspondent for LitORS has contributed our OR Society in Focus article for this issue. Just remember that your contributions are all welcome! 🌐



# Editorial

## Tout ou rien!\*

Dominique De Werra <dominique.dewerra@epfl.ch>

A lot of editorials have been written which lament the poor name given to OR, propose personal imaginative and innovative lucubrations and eventually reach the conclusion that the current situation is not that bad after all - that at least it has been around for a respectable number of years and changing it might be disastrous. Tempting though it may be, I will not suggest elaborate definitions of our field, for the sake of readers who have reached this far.

Fortunately, as Pierre Hansen observes, "No general agreement seems to have been reached about its methodology, and the directions in which it should evolve..." [2]. This is what makes OR an exciting and surprising science. Martin Grötschel, laureate of the EURO Gold Medal 2004, adds in his inaugural lecture that OR is "a subversive science and also a transdisciplinary discipline" [1]. But OR has more ingredients. As observed in [4], the role of humor is essential for our field: "In fact, humor is human and the only reasonable scientific attitude: humor is often a way of making a step backward and looking with some distance at what we are doing, asking whether it has some importance or relevance."

Aside from these characteristics, it has often been observed that our discipline is developing in a prosperous way by borrowing and integrating ideas arising in other sciences. This is particularly visible in the case of life sciences: we all know of the so called genetic methods developed a few years ago to solve intricate optimization problems; in this direction there are also ant procedures used to generate in a stepwise way "optimal" solutions. Interactions with natural sciences are still occurring with apparently fruitful consequences: in [3] flower pollination suggests an algorithm for multiobjective optimization. The authors also mention a cuckoo search and a shuffled frog-leaping algorithm. There will undoubtedly be many more examples of such interactions.

In addition, one should also emphasize that besides being a science, our discipline can also be viewed as an art: in the same way that an artist can feel subtle flavours that common people may not even notice, the OR specialist detects basic components and their interactions when s/he has to express these discoveries in a hopefully sober model which considers only what is needed. Here also simplicity is a virtue! As far as models are used, is this not precisely what defines artistic creation?

Realising now how elusive OR can be, how difficult it is to give it a clear denomination, how uneasy we feel when we try to locate its limits, we may wonder whether it is still possible to conceive the guidelines of an OR education.

Many people have extensively expressed their views on an "optimal" education for OR. Some have used original approaches based on games and contests while others have described the challenges of teaching OR or more precisely, the OR state of mind. Such experiences will certainly help educators to insuffle the most reluctant students with the spirit of optimization. Some claim that in spite of the famous "A course, a course! My kingdom for a course", ex cathedra lectures are no longer the most adequate instruments.

All these questions arise at all levels of education, i.e., the PhD and undergraduate training. One should remember that not too long ago in some European countries, young doctors had to hide their academic degree to increase their chances of getting a job in a company. Industrial employers considered such academic

degrees as excessive specialization, which would be prejudicial to the practice of OR in their companies. Our academic institutions have since made enormous efforts to explain that a PhD is essentially an education to research in general and that the exact topic of the PhD is not of major significance. But this message still has to be repeated.



Some have used original approaches based on games and contests

At this point, the question of designing the best possible education in OR remains and will do so for years, with many provisional answers being offered, depending on technologies which may emerge. So what can be done in such a changing environment? Most educators agree that one of the first qualities required is curiosity, i.e., the desire to discover, to understand how things interact and work.

In addition, a good intuition of phenomena is needed; but unfortunately intuition is not always innate. Hopefully in the long run, it may grow as experiences are accumulated.

But since both curiosity and intuition are fragile and ephemeral, they need to be trained in a repeated way. Therefore, to the question of *what education do we need for OR?* a natural answer is simply, *continuing education*.


IFORS has understood this need and brought a concrete answer by emphasizing the presence of tutorials in regional conferences through its IFORS Tutorial Lecture (ITL) program. Patterned after the IFORS Distinguished Lectures (IDL), the ITL encourages the conference organizers to include in their programmes some lectures in (semi-) plenary sessions where outstanding researchers familiarize the audience of OR users and OR developers with some emerging and promising fields by expressing their expert and original views in an understandable and motivating language.

If you have ideas about hot topics you would like to see in an IFORS tutorial or if you have suggestions of renowned speakers for a tutorial of quality, do not hesitate to contact the Administrative Committee, which welcomes such proposals.

Attending such tutorial lectures is a simple and efficient way of avoiding a premature intellectual sclerosis! It may even create a kind of addiction: as soon as you have attended some exciting tutorials, you may not want to miss any of those offered at subsequent conferences. This will be especially true when you realize that all tutorials proposed by IFORS are as prestigious and distinguished as the well-known IFORS Distinguished Lectures.

At that point, you may find that for tutorials, it will be *tout ou rien!* The choice is easy...

### References

- [1] M. Grötschel *Or on OR*, EURO XX, Rhodes, Greece, July 2004 (text available on EURO website)
- [2] P. Hansen *A short discussion of the OR crisis*, European Journal of Operational Research 38 (1989) 277-281.
- [3] X. S. Yang, M. Karamanoglu, X. He, *Flower pollination algorithm: A novel approach for multiobjective optimization*, Engineering Optimization 46 (2014) 1222-1237
- [4] D. de Werra *What is my objective function?* European Journal of Operational Research 99 (1997) 207-219. 

\* French Proverb, "Everything or Nothing"




## 27th EURO Conference Ready to Welcome Participants in Glasgow

The European Conference on Operational Research - Operational Research in Practice - which takes place at the University of Strathclyde, Glasgow, UK, from 12-15 July 2015, has received to-date more than 2,500 abstracts. Well-known speakers in the field, which include R.Tyrrell Rockafellar (University of Washington), Sir Alan Wilson (University College London), M Grazia Speranza (University of Brescia) have confirmed to give the plenary talks

The local organizers are currently working on an engaging programme that will use a variety of locations across


campus. The EURO2015 social programme has something for everyone, from the conference dinner in the stunning and unique The Arches, a peculiar hidden gem located in the heart of Glasgow's city centre, to a relaxed informal networking night set in Merchant Square, a diverse and quirky venue a few minutes' walk from the Strathclyde University campus. In addition to the conference, EURO2015 also provides the opportunity to visit the lively city of Glasgow and the beautiful countryside of Scotland.

Practitioners, students, researchers and academics interested in any branch of Operational Research, mathematical modelling or economic analysis are invited to attend EURO2015. More information on such details as the main topical areas, social programme and planning your trip to Glasgow is available on the website [www.euro2015.org](http://www.euro2015.org). 

## MCDA WG Recognizes B. Roy's Work

**Evangelos Grigoroudis** <[vangelis@ergasya.tuc.gr](mailto:vangelis@ergasya.tuc.gr)>

The Greek Working Group on Multicriteria Decision Analysis (MCDA), which operates under the auspices of the Hellenic Operational Research Society, awarded Professor Bernard Roy, with an honorary diploma during the 81st Meeting of the European Working Group on MCDA, in 26th March 2015 held in Annecy, France,

B. Roy, born in 1934, has worked on graph theory and on MCDA and decision aid, having created the famous ELECTRE methods. He is the founder of the EURO Working Group on MCDA. Founded in 1975, the European Working Group has evolved from a membership of 29 scientists from five countries to approximately 300 members from 32 countries. Greece has so far hosted five meetings of the group. 



▲ Awardee (3rd from left) shown above with members of the Greek and European WG (l to r): Nikos Tsotsolas, Konstantinos Zopounidis, Yiannis Siskos (founder and director of the Greek Working Group), Nikolaos Matsatsinis, Vassilis Kostoglou and Eleftherios Siskos.



▲ Staszic Palais, with the monument of Nicolaus Copernicus, has served as the seat of the learned societies since its construction in the 1830s.

Operational Research Societies, organized the latest meeting of BOS. An acronym for the Polish abbreviation of *Operations and Systems Research*, BOS is the traditional biannual national conference organized since the 80's. In September 2014, this conference had a special character, having been collocated with a number of other international events, namely the: IEEE Intelligent Systems, and Soft Methods in Probability and Statistics, as well as with the International Workshop on Intuitionistic Fuzzy Sets and General Nets. All these


## BOS2014 Reveals Multiple Facets

**Jan W. Owsinski** <[Jan.Owsinski@ibspan.waw.pl](mailto:Jan.Owsinski@ibspan.waw.pl)>

The Polish Operational and Systems Research Society (POSRS), attached to the IFORS member Association of Polish

took place within five days, and POSRS had an important part in their organization and running. At these meetings, more than 300 papers were presented, where about the same number of participants represented more than 40 countries. Plenary lectures were given by authorities in their respective specialized fields. The meetings took place almost simultaneously, all with the noteworthy participation of an active international corps of young researchers.

This meeting, like the last BOS, was held at the heart of Warsaw in the historical Staszic Palais, the seat of scientific societies and institutes, the Warsaw Scientific Society of old, and currently of the Polish Academy of Sciences alongside other research institutes.

Indeed, it can be said that POSRS succeeded in bringing a multifaceted event, with the various areas it covered, the prominent scientists it gathered, and the active participation of young researchers it inspired, within an old historical setting of the sciences. 



# MCDA Group Takes A Close Look at Agricultural Development and the Rural Economy

Evangelos Grigoroudis <vangelis@ergasya.tuc.gr>

The 11th Meeting of the Greek Multicriteria Decision Analysis Group was held on March 12-14, 2015, in Agrinio, Greece. Organized by the Business Administration Department of Agricultural and Food, University of Patras and the Hellenic Operational Research Society, the conference enabled participating researchers and entrepreneurs in the field to converse on the theme of agricultural development and explore possibilities for cooperation.

The conference was well-received by the research, academic and business communities. Thirty-five scientific papers were presented, and more than 70 researchers, professors, and scientists, along with PhD, undergraduate, and graduate students within the field of operational research attended the meeting.

Christina Staraka, Vice-Prefect of Aetolia-Acarnania; George Papanastasiou, Mayor of Agrinio; and Ioannis Psaras, president of Hellenic Operational Research Society opened the Conference. They were followed by presentations from representatives of local firms.

Full papers and abstracts submitted will be published in the meeting proceedings after a peer review process. Selected papers will be published after an additional review



▲ Above shows one of the interesting presentations of the 3-day meeting.

in special issues of the following journals: *International Journal of Multiple Criteria Decision Making (IMCDM)*; and the *International Journal of Decision Support Systems, Inderscience (IJSS)*.

The conference was sponsored by the Western Greece Prefecture and the Municipality of Agrinio, along with the University of Patras and several local firms. The success of the meeting owed much to the efforts of Chair of the Scientific Committee Dimitrios Skouras and Chair of the Organizing Committee, Athanasia Bouranta, both from the University of Patras. 🌐



## APORS 2015 Tweets

Where hornbills tweet – that is Sarawak in Malaysia, known as The Land of Hornbills. Its capital city, Kuching, hosts the 10th Triennial Conference of the Association of Asia-Pacific Operational Research Societies (APORS2015), from August 2 to 6, 2015. An attractive scientific programme with diverse topics has been created to encourage and facilitate exchange of knowledge and experience in operational research. Sarawak, home to one of the oldest rainforests in the world, is an epicentre of biodiversity and is therefore the perfect setting for the conference theme of **OR and the Environment**.

After peer review, hundreds of papers from all over the world have been accepted. Organizers have also invited renowned speakers. For more information, please visit [www.msorsm.org/apors2015](http://www.msorsm.org/apors2015). 🌐

## Summer School

## ELAVIO Caps 19th Year of Service to Young OR Professionals

Vanessa Guerrero Lozano <vguerrero@us.es>, Sandra Huber <sandra-huber@hsu-hh.de> and Gustavo Bittencourt <gustavo.bittencourt@engenharia.uff.br>

Home of the artist Oswaldo Guayasamín, near the Pululuhua Volcano and the equator line, Quito the capital of Ecuador, was the site of the XIX Latin-American Summer School on Operations Research (ELAVIO 2015) from February 23 to 27 at the Escuela Politécnica Nacional (EPN). Chaired by Luis Miguel Torres, the School had a rich scientific and social program.

The scientific program included five mini-courses: *Sparse Optimization* (Juan Carlos de los Reyes of MODEMAT and Escuela Politécnica Nacional, Ecuador), *Graph Partitioning* (Diego Recalde of Escuela Politécnica Nacional, Ecuador), *Discrete And*

*Quadratic Optimization* (Christoph Buchheim of the Technical University of Dortmund, Germany), *Computational Complexity Vs. Compact Linear Descriptions* (Graciela Nasini of Universidad Nacional de Rosario, Argentina) and *Sustainable Management And Recovery Of Overexploited Marine Resources* (Pedro Gajardo of Universidad Técnica Federico Santa María, Chile); two plenary talks: *Metaheurísticas Para Problemas De Ruteo De Vehículos* (Irene Loiseau of Universidad de Buenos Aires, Argentina) and *Models for ITS and Smart Cities* (Jaume Barceló of Polytechnic University of Catalonia, Spain); one scientific exchange session and three technical sessions, which were organized in five parallel tracks.

During the technical sessions, students presented their work to the audience. Apart from getting very useful feedback, new ideas and possibilities for improving the approaches and results presented, the students benefited from honing their presentation skills. Student presentations ranged from very interesting topics from emergency systems management to robotic hands, utilizing image denoising models and nonlinear mixed integer programming.

In addition to the rich scientific program, a pleasant social program included a double-decker bus tour covering all the sights in the city center, including the Presidential Palace, "El Panecillo". The whole week featured lunches and dinners where participants were treated to a wide variety of typical food from Ecuador. Capping the social activities was the last night, which highlighted Ecuadorian traditional dances and music.

ELAVIO is a summer school on Operations Research, which brings together young researchers (master and PhD students) from all over the world to create a knowledge network for future collaboration. It is organized yearly by the ALIO (Latin-IberoAmerican Association of Operations Research) and hosted in ALIO member countries. IFORS has traditionally supported the travel expenses of a young researcher. This year's grant went to Gustavo Bittencourt from the Federal University of Rio de Janeiro, Brazil who apparently gained much from

**Apart from getting very useful feedback, new ideas and possibilities for improving the approaches and results presented, the students benefited from honing their presentation skills.**

the experience as shown by his comment: *Ya te extraño mucho, Quito linda! Hasta el proximo año en Cali! Great courses, exciting presentations, and the most important: AMAZING PEOPLE from many countries: the lovely Ecuadorians who received us so well; the lively Cubans; the happy Chileans; the funny Colombians; the excited Peruvians; the dancing Venezuelans; the beloved Mexicans; the smiling Argentines; the friendly Spanish, Germans and Italians; and the crazy Brazilians!"*



▲ Young researchers at work (taking time out from the sessions, top) and at play (seeing the sights, bottom) in Quito, Ecuador.

On the other hand, IFORS supported the program fees and accommodation costs of two candidates selected from within the Association of European Operational Research Societies (EURO). Qualifying for this opportunity of travel expense grant from EURO were Vanesa Guerrero Lozano from the Departamento Estadística e Investigación Operativa and Instituto de Matemáticas de la Universidad de Sevilla (IMUS), Spain and Sandra Huber from the Logistics-Management Department of the Helmut Schmidt University, Hamburg, Germany.

Both were very appreciative: *"The ELAVIO was a great event to share experiences in a fun and friendly environment and we are very thankful for this opportunity. We made very good friends in Quito, with whom we expect to keep in touch for a very long time. Who knows if we will work at the same place in the future and we will be co-authors!"* 🌐

## Book Review

### On the Inside Track of Transport Modelling

Hans Ittmann <hittmann01@gmail.com>, University of Johannesburg

**Freight Transport Modelling** edited by Moshe Ben-Eliva, Hilde Meersman and Eddy Van de Voorde, 2013, Emerald Group Publishing Limited, Bingley, UK. pp. 497, ISBN: 978-1-78190-285-1 USA Dollars 110 (Hardcover).

As one of the major economic forces in recent times, globalisation has brought about an emerging and strong middle class, urbanisation, industrialisation, and a rapidly rising demand for goods and services. One other major consequence is the need for new infrastructure such as roads, ports, railway lines, communications, water and energy, making infrastructure investment a hugely important topic for the global economy. This has, in turn, made transport and the associated business logistics and supply chain management a major functional domain.

Decisions around formulating transport policy and constructing transport infrastructure require a sound scientific basis which is based largely on freight transport models. These models consider a wide range of internal and external impacts. Although transport growth is essential for the economy, unrestrained expansion could contribute to considerable social costs such as pollution, congestion, accidents, and land required for

infrastructure.

Given these issues and scenarios, researchers and policy makers have turned more and more to freight transport models. The book *Freight Transport Modelling* contains the latest research of international researchers on new developments in the area.

The three main parts of the book focus on global, regional and local (or urban) perspectives, with each part made up of four, eleven and six chapters, respectively.

The first chapter of the global part points out that determining future aggregated freight flows and volumes by relating it to economic activity indicated by GDP growth does not hold any longer. Alternatives using mainly indicators of a microeconomic nature are suggested to estimate the relationship between freight and economic activity.





This is followed by a chapter on freight demand in Europe. Here, the specifications of a multi-regional input-output (MRIO) model with elastic trade coefficients are presented and a multi-modal freight supply model is proposed. The MRIO approach is briefly reviewed while important theoretical issues relating to demand and supply modelling are discussed.

An aggregate-disaggregate-aggregate (ADA) freight model is then presented, which models the generation of trade flows and assigns these to networks in an aggregated way while simulating logistics decisions at the level of firm-to-firm flows. The last chapter in this part describes a dynamic shipper-carrier problem modelled as a differential Stackelberg game. In broad terms, the shipper-carrier model studies the interaction between two groups of players: shippers that ship a commodity to the market within a network and carriers that provide a transportation service.

Focusing on regional freight transport issues, the second part of the book outlines models that can be used for modal selection. The first chapter presents discrete choice models that predict shippers' choice of mode more accurately. The basic and extended logistics choice model is discussed in detail, showing the influence of total logistics costs and service quality on modal choice. Four different methodologies analysing individuals' stated preferences on choice of modes is the topic of the next chapter. Following this, models of the spatiotemporal movement patterns of delivery vehicles on the infrastructure is discussed. The distribution of commodities to spatial nodes and connections with multi-agents which need to cooperate are modelled.


Discrete choice models come up again with the discussion on the discrepancies in accounting for the willingness to pay (WTP) and the willingness to accept (WTA) during economic evaluation of transport measures in cost benefit analysis studies. The theory is then outlined, with results from empirical tests considering endogenous freight shipment sizes in freight mode choice models. Shipment size is handled both as a central variable in logistics optimization and in freight transport demand modelling. Separate chapters cover: the increasingly important area of supply-chain risk phenomenon; truck routing and the associated decision-making processes and factors affecting it; and a comparative analysis on logistics managers' stated preferences for freight service attributes. The final three chapters

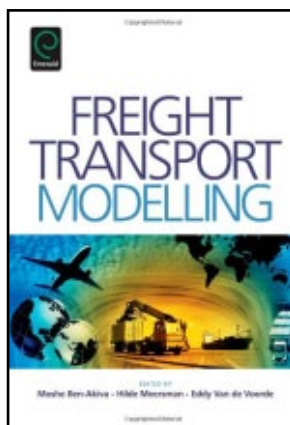
in the regional part of the book address: capacity utilization of vehicles used for road freight transport; a cost based analysis (CBA) approach where transport time savings and improved reliability in freight transport are valued; and finally freight transport pricing models which consider a range of costs, tariffs and rating structures.

Urban or city logistics, which is concerned with the continuous flow of commodities from suppliers to customers through pick up and delivery of freight, is addressed in the third part of the book. It gives a state of the art of Urban Freight Tour (UFT) where simulation, hybrid and analytical models are discussed along with practical examples. A UFT that models behavioural aspects of urban goods movements is presented while the following chapter uses a supply chain approach to urban freight distribution as it is used for policy impact evaluations on supply chain performance.

Designing a future master plan for urban logistics that can be used by local authorities is presented as an approach, followed by a three-step methodology, to determine the impact of the proposed changes. The next chapter addresses tactical and operational City Logistics through modelling freight vehicle flow to simulate delivery tours. The last chapter describes city logistics models for urban freight distribution that allow real-time fleet management decision making under time-dependent conditions.

Freight transport models are essential decision support tools that enable policy makers to develop effective and plausible policies. These models are likewise indispensable tools for making infrastructure investment decisions. A new road is typically built to last 20 to 30 years, even longer with proper maintenance while railroads typically have life spans of over 100 years. Especially for the latter case, it is critically important to know the long-term demand for new or additional capacity to ensure recovery of the investment.

There is currently a vital need to develop new freight transport models and scientific tools that provide sound solutions to increasingly complex freight transport problems. The contributions covered in this book from some of the foremost international contributors and researchers in the area clearly address this need to keep abreast of the ever expanding frontiers of freight transport modelling and analysis. 



## IFORS NEWS

### Section Editors

OR Impact	Sue Merchant/John Ranyard
OR for Development	Arabinda Tripathy
Book Review	Hans Iltman

### Regional Correspondents

ALIO	Annibal Paracho
APORS	Degang Liu
EURO	Gerhard Wilhelm Weber
NORAM	Grace Lin

### Country Correspondents

Argentina	Esteban Feuerstein
Australia	Erhan Kozan
Austria	Dr. Raimund Kovacevic
Belarus	Prof. Dr. Vladimir Golovko

Brazil	Sheila Zokner
Canada	Dionne Aleman
Chile	Victor Albornoz
China	Degang Liu
Croatia	Snjezana Pivac
Czech Republic	Jaroslav Ramik
Denmark	Sanne Wohlk
Finland	Tuomas Lahtinen
France	Luce Brotocorne
Germany	Corinna Hallmann
Greece	Evangelos Grigoroudis
Hungary	Imreh Csanad
India	N.M. Ganguli
Iran	Nezam Mahdavi-Amiri
Ireland	Cathal Brugha

Korea	Chang Won Lee
Lithuania	Leonidas Sakalauskas
Malaysia	Ilias Mamat
Nepal	Sunity Shrestha Hada
Peru	Orestes Cachay Bosa
Philippines	Malu de Guzman U
Poland	Jan W. Owsinski
Portugal	Isabel Correia
Singapore	Huang Boray
Slovenia	Niko Schlamberger
South Africa	Martin Kidd
Spain	Juan-José Salazar-González
Sweden	Tomas Gustafsson
USA	Grace Lin
Uruguay	María E. Urquhart

Kenneth Sörensen\* <kenneth.sorensen@ua.ac.be> University of Antwerp, Faculty of Applied Economics, Department of Engineering Management

The field of combinatorial optimization is overrun by a herd of “novel” metaheuristic methods based on a metaphor of some natural or man-made process. The behavior of almost every species of insects, the flow of water, musicians playing music, the behavior of bats, dolphins, frogs, kangaroos, cuckoos, penguins, wolves, and an entire zoo of other animals, miners digging for ore, societies competing for colonies, consultants, sports championships, electromagnetism, gravity, cloud formation, flower pollination, and many, many more: it seems that no process is too outlandish or too bizarre to serve as the basis for yet another “novel” method. Moreover, this is not a marginal phenomenon. Many of the proposed methods end up being published in high-quality journals and the number of publications focused on metaphor-based metaheuristics keeps on increasing year after year.



In the paper “Metaheuristics – the Metaphor Exposed”, I have attempted to find explanations for this strange phenomenon and to explain what is wrong with it.

The explanation for the barrage of “novel” metaphor-based methods is complex.

Partially, it can no doubt be explained by the historical development of the field. It is not an exaggeration that many of the useful ideas in the metaheuristic field were inspired by a real-world process. For example, the process of evolution by natural selection has provided inspiration for a number of metaheuristic frameworks that attempt to find good solutions by recombining the elements of “parent” solutions. Similarly, the way in which ants communicate information through the use of pheromones, has given inspiration for the development of a set of constructive algorithms in which information from previously built solutions is integrated into the construction process. However, some part of the field of metaheuristics has shifted from a situation in which metaphors are used as *inspiration* to one in which they are used as *justification*, a shift that has far-reaching consequences on its credibility as a research area.

Another reason for the existence of metaphor-based metaheuristics is certainly the field’s fetish with novelty. Of course, researchers always aim to make significant new scientific discoveries, and the acclaim that initial metaphor-based metaheuristics like simulated annealing, evolutionary algorithms, and ant colony optimization received, has certainly inspired many to attempt to achieve similar status.

It is not surprising by the way, that many of the novel methods are vigorously marketed by a single researcher, who often co-authors a sizeable fraction of all papers on “his” method. (The use of the masculine pronoun is not coincidental: without wishing to draw any conclusions, the fact stands that it is never “her” method.)

A third reason is the childish obsession of the metaheuristics community with the (perceived) performance of the methods that are developed. Indeed, optimization is often talked about in competitive terminology, and a good method is one that “beats” other methods. Combine this with a complete lack of established testing protocols, allowing researchers to present the results of their method in the way they want, and the result is a recipe for disaster. Publishing a method does not require cross-

validation, replication of experiments is never done, and window-dressing the results of “your” method is simply too easy. Without exaggerating: if medicines were tested in the same way, we would all be dead.

The overarching *problem* with “novel” metaphor-based methods is simple: *they’re not science*. This breaks down into a number of distinct issues.

First, metaphor-based methods are generally explained in a mixture of optimization vocabulary and vocabulary derived from the metaphor. As a consequence, one may read gems like “The amount of soil on the edges of the iteration-best solution is reduced based on the goodness (quality) of the solution”, or “In this case the bait helps the Green Heron bird to catch a prey and thus the solution set elements remains constant [ . . . ]”. (To be sure, these are actual quotes from published papers). This change of vocabulary, does little more than confuse the reader, making it difficult to frame the paper in the existing literature (something the author should have done himself, of course).

Secondly, metaphor-based metaheuristics are generally not “novel” at all, but rather present long-established methods relabeled using the metaphor’s vocabulary. This was formally proven for, e.g., Harmony Search, but similar results may no doubt be derived for most other metaphor-based methods. The point is, again, that the novelty of the method cannot be established because the underlying mechanisms are confounded through the metaphor-based vocabulary.

Thirdly, a large majority of metaphor-based methods are not properly tested. Usually, testing takes place on problems that are generally considered trivial, using only a small set of instances, and compared only to other metaphor-based methods. Indeed, the metaphor-based metaheuristics community seems to have become an island that is slowly drifting away from the rest of the research community on metaheuristics.



A final problem is that the sheer silliness of many of the proposed methods (“consultant-guided search”, “the cuckoo method”, “Japanese tree frogs calling”, ...) reflects badly on the entire research community. To drive the point home: it makes all of us look ridiculous.

The article “Metaheuristics – the Metaphor Exposed” ends on a positive note: there is a lot of excellent research currently being done in the community, research that is adequately framed in the literature and written in the generally accepted terminology of optimization. Current techniques are analyzed in much greater depth than before, and new techniques are being developed whose novelty goes beyond the vocabulary they use. The community is starting to accept contributions even if they do not contain any “novel” method or a method that “outperforms all existing approaches”.

Some journals (like the Journal of Heuristics) have even changed their editorial policies and are — as a general rule — no longer accepting “novel” metaphor-based methods. Clearly, the field of metaheuristics is on the right track. It is up to us to get everyone on the same train. 🌐

\* Sörensen, K. (2015). Metaheuristics—The Metaphor Exposed. *International Transactions in Operational Research*, 22(1), 3-18.

# Transforming Hospital Emergency Department Work Flow and Patient Care

**Eva K. Lee**, Centre for Operations Research in Medicine and HealthCare, Georgia Institute of Technology, Atlanta, Georgia 30332;

**Hany Y. Atallah**, Grady Health System, Atlanta, Georgia; and Department of Emergency Medicine, Emory University School of Medicine, Atlanta, Georgia 30322

**Michael D. Wright**, Grady Health System, Atlanta, Georgia 30322

**Eleanor T. Post**, Rockdale Medical Centre, Conyers, Georgia 30012

**Calvin Thomas IV**, Health Ivy Tech Community College, Indianapolis, Indiana 46208

**Daniel T. Wu, Leon L. Haley Jr.**, Grady Health System, Atlanta, Georgia; and Department of Emergency Medicine, Emory University School of Medicine, Atlanta, Georgia 30322

## Background

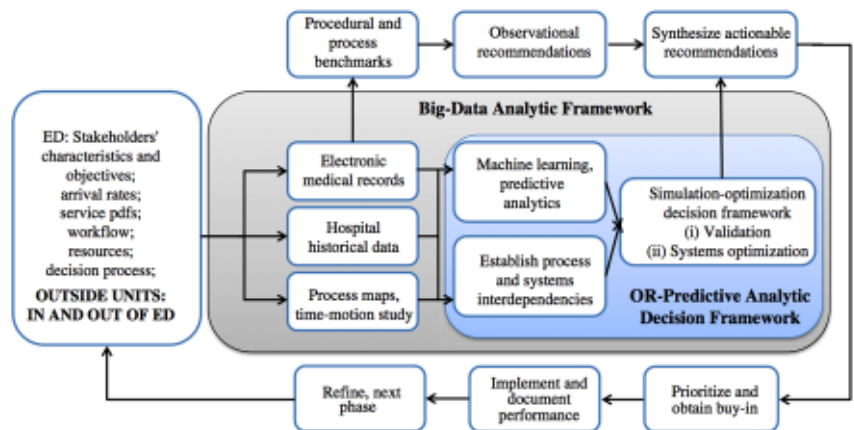
Over the past two decades, emergency department (ED) crowding and delays have become serious issues for hospitals and health systems in the United States. ED visits have increased by more than 2 million per year, characterized by patients who were older and sicker, and thus required more complex, time-consuming workups (i.e., complete medical examinations, including medical history, physical exam, laboratory tests, X-rays, and analysis) and treatments, and by non-urgent patients who use the ED in place of primary care facilities. In 2012, hospitals reported that more than 40 percent of ED patient visits were for non-urgent care, contributing to long waiting times, decreased quality and timeliness of care, and decreased patient satisfaction. The ED crisis is being experienced across the nation. In January 2014, the American College of Emergency Physicians ranked [nationwide] ED access as D+ to reflect “that hospitals are not getting the necessary support in order to provide effective and efficient emergency care.”

Grady Memorial Hospital is the fifth-largest safety net hospital in the United States. These hospitals provide a disproportionate amount of care to vulnerable populations. Cutbacks made as a result of the financial crisis threatened every local- or state-owned public safety-net hospital, as they are based on a not-for-profit model, serving low-income, uninsured and vulnerable populations. As a result, Grady faced imminent closure in 2008. In the midst of this financial crisis, a new management team came on board to rescue the hospital and transform its operations. The new leadership was committed to serious ED system transformation and initiated a joint collaboration with our team of operations researchers. Through extensive data collection and vigorous OR analytical advances and recommendations, Grady adopted the transformative steps, which included addressing readmissions, quality, timeliness, and efficiency of care before the Affordable Care Act and its associated penalties were put in place.

## The Models

The Georgia Tech - Grady team swiftly began developing system models and machine learning tools which aimed to reduce waiting times, improve workflow and overall effectiveness of care delivery based on patient risk factors, demand characteristics, treatment evidence, hospital resources and providers' knowledge.

Figure 1 highlights the study schema and the interdependencies of our methods. The human-centered computational modeling environment comprises data analytics served by innovative OR predictive decision tools. We simultaneously explore patterns of patient behaviour and care characteristics, provider decision and process workflow, facility-layout design, and staffing, where resource allocation, cognitive human behaviour, and care patterns are optimized globally for best outcomes, as measured by length of stay (LOS) and readmissions. Uncovering patterns



**Figure 1:** This shows the study schema and interdependencies of the analytic framework that we use. These interdependencies are crucial to achieving a valid description of the actual processes.

in patient care helps to appropriately align resources with demands, and enables providers to better anticipate needs. Exploring facility design provides decision makers with the envisioned improvement before they embark on an expensive layout redesign effort.

The new ED system couples machine learning, simulation and optimization decision support to improve the efficiency and timeliness of care in the emergency department, while reducing avoidable re-admissions. Specifically, the simulation-optimization decision support environment optimizes resource allocation, throughput, operations, and systems performance (wait-time, queue length, utilization, etc). The novelty herein is the incorporation of patient characteristics and care patterns that are uncovered from the machine learning framework. Hence, patients within the simulation present disease symptoms that challenge the care providers. They mimic the behaviour of returning patients for whom certain symptoms may not have been diagnosed properly during previous ED visits.

The model allows one to optimize the ED workflow globally, taking into account the uncertainty of human disease characteristics and care patterns, so as to drive the length of stay and waiting time for patients to a minimum. It provides a comprehensive analysis of the entire patient flow from registration to discharge, and enables the decision-maker to understand complexities and inter-dependencies of individual steps in the process sequence, and ultimately, allows one to perform systems optimization to achieve best possible performance.

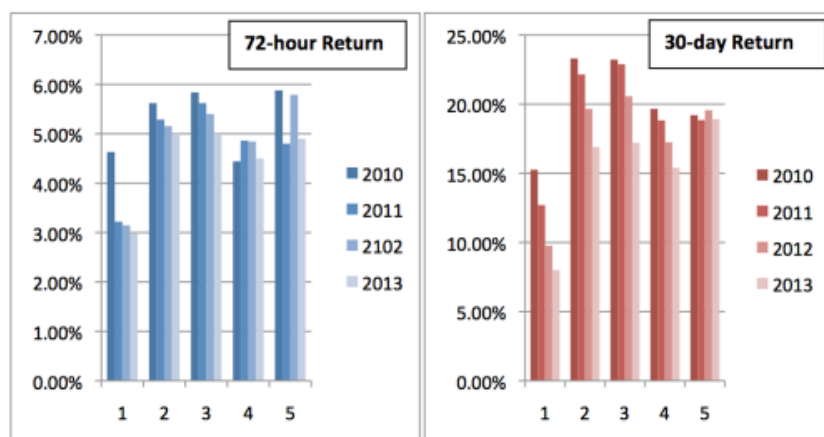
Our system optimization realizes improvements without attempting to change the behaviour of healthcare providers or patients. Rather, the system captures the human behaviour and optimizes the workflow process to achieve optimal results. The strategy is to accept, not change, the variability in human behaviour and services and incorporate these elements into the system model to reflect workflow along with human characteristics.



This approach is particularly important for a teaching hospital where residents and medical students are heavily involved in the care process.

## The Outcome

From the hospital's perspective, this work advanced the actual ED operations in several ways: the solution returned was implemented and realized without extra financial and labour investment; Grady achieved a sustained improvement beginning in 2009; it was able to garner external sponsorships to implement recommendations that required financial investment, thus realizing further ED improvements; and an alternative care Walk-in-Clinic enabled further improvements in efficiency. Together, these changes contributed to improved quality of care, and to greater financial health and stability of the hospital.



**Figure 2** The figure shows the percentage of revisits by acuity levels 1 through 5, with Level 1 means immediate and most severe. This figure shows percentage of ED revisits, 2010 (no intervention) vs 2011 (Phase I) vs 2012-3 (Phase II). Note the significant drop in 72-hour and 30-day returns upon Phase I implementation. The machine learning tool “learns” from revisit patterns and improves progressively as it adapts through the years. The super-utilizers who use ED as primary care service (among Level 4/5) remain a challenge, especially for 72-hour returns.

**Table 1 Improvements in length of stay, waiting times, return visits, and overall ED throughput.**

Annual	Improvement
Average Length of Stay (LOS)	-33% (3.35 hours)
LOS – trauma a stroke	-20% (1.5 hours)
Average Waiting Time	-70% (3.12 hours)
Return Visits	-28% (602 patients)
Left without being seen	-30% (5553 patients)
Annual Patient Numbers	+7.8% (8114 patients)
Trauma	+8.4% (1664 patients)
Severe Trauma	+14% (417 patients)

The transformations helped to reduce the length of stay by roughly 33%. By re-purposing existing resources, the hospital established a clinical decision unit that led to a reduction of 28% in ED readmissions. The Walk-in-Clinic redirects more than 32% of the non-urgent-care cases from the ED. By redirecting non-urgent ED patients, the hospital saved valuable resources and reduced the costs needed to unnecessarily treat these patients in the ED. With these improvements, the hospital enhanced its financial standing and achieved its target goal of an average ED length of stay close to 7 hours. ED and trauma efficiency improved throughput by over 16.2% and reduced the number of patients who left without being seen by over 30%.

**The annual realized revenue and cost savings amount to approximately \$190 million (up 72%), a large amount**

**relative to the hospital's \$1.5 billion annual economic impact.** The system offers various advantages in that it permits a comprehensive analysis of the entire patient flow from registration to discharge, enables the decision-maker to understand complexities and inter-dependencies of individual steps in the process sequence, and ultimately allows the user to perform system optimization.

## OR Advances

The novelty of our OR-driven analytical work includes performing systems optimization within the ED simulation environment; incorporating treatment patterns and patient characteristics dynamically and stochastically within the ED operations and quality-improvement framework; modelling ED readmission using—simultaneously—demographics, socioeconomic status, clinical information, hospital operations, and disease behavioural patterns; modelling ED interdependencies involving other hospital units; and integrating a machine learning framework within the simulation-optimization environment. Many challenges had to be overcome and are reported in several papers referenced in the Interfaces paper.

## Further Impact

The model is generalizable and has been tested and successfully implemented in twenty other EDs for system improvement. The benefits resulted across these EDs are consistent with the substantial benefits Grady achieved. The ED volumes range from 30,000 to 80,000 patients per year at these sites. Upon implementation, they have experienced a total throughput increase of 15%-35%, a reduction in revisits of severe acute patients of 19%-41%, a reduction in lengths of stay of 15%-38%, and a reduction in patients left-without-being-seen of 35%-50%.

Grady has applied the technology successfully in other units, including medication error analysis for the pharmacy, hospital-acquired conditions in the ED, and system performance in the operating room, and intensive care units.

## Accolades

The work described here was selected as a finalist for the 2014 INFORMS Franz Edelman award and also as a second place winner in the INFORMS Wagner prize, both in 2014. This unique achievement was acknowledged by veteran practitioners Randall Robinson and John Milne in Interfaces, September 2014. The CEO of Grady Health Systems, John Haupt, has commented: “We are deeply honoured to have been finalists for such prestigious awards. The hard work that has resulted from the collaboration with Dr. Lee at Georgia Tech and our programs at Grady has benefited patients and directly saved lives. We are testament to the fact that even in the current economic and healthcare climate, improvements can be made that benefit patients, the institution and lead to improved patient outcomes. The true winners are our patients”

## Acknowledgement.

A fuller description of the work appears in Interfaces and this shortened version is reproduced by kind permission of the Editor.

## References

- Eva K. Lee et al (2015) Transforming Hospital Emergency Department Workflow and Patient Care, *Interfaces*, 45 (1): 58-82
- Robinson RS and Milne RJ (2014) Special Issue Editors' Note: Wagner Prize Second-Place Winner – Lee et al./Grady Health System, *Interfaces* 44 (5) p444. [🌐](#)



# ICORD 2015

## INTERNATIONAL CONFERENCE ON OR FOR DEVELOPMENT,

DECEMBER 3-4, 2015 @ PALM VILLAGE HOTEL, USWETAKEIYAVA, NORTH OF COLOMBO, SRI LANKA

The International Conference on Operational Research for Development 2015 (ICORD 2015) will be held from 3 to 4 in December this year at the Palm Village Hotel, Uswetakeiyava (North of Colombo) Sri Lanka in collaboration with the Department of Mathematics, Faculty of Engineering, University of Moratuwa.

### Background

ICORDs are organised in a workshop format. It provides adequate time for presentation by the participants followed by discussions. Formal discussants/ reviewer (amongst the participants) are identified for each paper based on the theme of the paper and interest of the participants, in addition to open discussion.

Having started in 1992, ICORDs have been making impacts on IFORS in terms of its activities related to development and developing countries. Since 1992, it has been organised in Brazil, India, Italy, Philippines, South Africa, Tunisia, Italy and Spain. ICORDs have been having participants from academic, research and practicing community with interest/ involvement/ experience in development related issues and/ or developing countries. As the workshop is rather intense in its deliberations, it usually has around 30 participants. Focussed areas include broader context of education, health, community welfare, energy, environment, urban planning, agriculture, and the like.

### Conference Theme

Theme of conference is **OR: Enabling Development through Good Governance**. History is replete with examples of how good governance has paved the way to development. A recent example is Singapore, where the leadership of Lee Kuan Yew has transformed a third world country mired in poverty to a prosperous global financial hub.

Literature shows that OR applications have not only enhanced the profitability of companies but have enabled governments to create effective and efficient public institutions that respond to people's needs, thus accelerating the development process to enhance the standard of living. These have called on OR approaches that optimize the use of scarce resources as well as facilitate the implementation of social and economic initiatives in the developing world. This conference aims to focus on work that will enable good governance towards the objective of development, especially in developing countries.

### Call for Papers

Operations Researchers who are working in the area of OR for Development are invited to submit their work which has used Operations Research to help decision-making processes in the area of education, health, and other basic services, water,

technology, resource use (physical or financial), infrastructure, agricultural/industrialization, or environmental sustainability. The work should have helped optimize development in view of constraints and limited resources, preferably with a stress on good governance as it affects developmental issues. Purely technical papers, or those that have no relevance in the developmental context, will not be accepted.

Extended abstracts (no less than 1,500 words) will be accepted, though full papers (needed for a meaningful review) are preferred. Please submit to Arabinda Tripathy <tripathy44@rediffmail.com>.

Participants who have participated in previous ICORDs and who have brought their work forward are encouraged to attend to report on developments on their previously presented work.

### Important Dates

Deadline for extended abstract submission: August 15, 2015

Notification of acceptance: August 30, 2015

Deadline for registration for inclusion in program: September 15, 2015

### Organizing Committee

OVERALL CHAIR - Arabinda Tripathy

#### INTERNATIONAL ADVISORY COMMITTEE

Sue Merchant, IFORS Vice President

Elise del Rosario, Past President, IFORS

Gerhard Wilhelm Weber, Institute of Applied Mathematics, METU, Ankara, Turkey,

Hans Ittmann - Operational Research Society of South Africa

Sunity Shrestha Hada- Operational Research Society of Nepal

#### LOCAL ORGANIZING COMMITTEE

Prof. T S G Peiris (Chairman) University of Moratuwa

John NLC Fernando, Arbitrator/Consultant/Lecturer, IBM QCC

Prof. H S Chandana Perera (SLIIT, SL)

#### TECHNICAL COMMITTEE

Prof. W B Daudasekara (University of Peradeniya, SL)

Dr (Mrs) R A R Prabodini (University of Wayaba)


Dr. D M Samarathunga (University of Ruhuna, SL)

Mr. T M J A Cooray (University of Moratuwa, SL)

### Fees

Local Participants: Rs 7,000

Participants from SAARC countries: USD 75

Others: USD 125 

# IFORS Supports ORPA Conference in Algeria

**Sheetal Silal** <sheetal.silal@uct.ac.za>

The 6th Operational Research Practice in Africa (ORPA) Conference was held at the University of Science and Technology Houari Boumedienne (USTHB), in Algiers (Algeria), on April 20-22, 2015. IFORS sponsored two plenary speakers to the conference, Hans Ittmann from the University of Johannesburg, and Sheetal Silal from the University of Cape Town. ORPA is an initiative aimed at promoting the use of operational research in Africa both academically and in practice. The first ORPA conference in Ouagadougou, Burkina Faso in 2005 was supported by IFORS and EURO. Subsequent ORPAs had since been held in London, Cape Town, Washington and Dakar.

For the 2015 ORPA, more than 70 participants from Algeria, France, Tunisia, Mali, Senegal, Oman and Jordan listened to more than 50 presentations covering a wide range of topics including genetic algorithms and metaheuristics, combinatorics topics such as Bell and Stirling numbers, new heuristic methods for transportation networks and land use problems, mixed integer linear programming models for the North Atlantic Aircraft Trajectory Planning, a game-based algorithm assigning selfish users on a road network, graph theory, combinatorial optimisation and stochastic programming.



▲ Best Paper Award Winners: Karim Amrouche and Amar Oukil

Though French was the most widely spoken language at the conference, many presentations were in English, and the universal language of mathematics helped to overcome language barriers. Hans Ittmann presented two plenary talks entitled *Freight Transport Planning and*

*Modelling - Its Application Within A Rail Environment and City Logistics and Urban Freight Transport Challenges in Developing Countries*, which highlighted the importance of the planning process in long-term forecasting and the need for systemic thinking in overcoming transport challenges in the future. He covered methods underlying transport models and innovative solutions currently in place in other parts of the world.

Sheetal Silal presented a talk on *Hitting A Moving Target: Analysing Epidemiology Using Operational Research*, which showed how methods like differential equation modelling and agent-based

simulation capture the transmission dynamics of diseases such as malaria, Ebola and HIV/Aids. She also discussed how mathematics could capture disease

pathways and human behavior, even touching on

the possibility of applying such mathematical models to the problem of scorpion stings in Algeria.



▲ (Left to right): Serigne Gueye, Hans Ittmann, Mohamed El-Amine Chergui and Sheetal Silal pose with the Conference banner.

A Doctoral School programme held in conjunction with the conference covered topics on graph theory, combinatorial optimization, transport and logistics. At the end of the conference, two awards were presented: Best Student Paper Award to *Complexity Results of a Chain Re-entrant Shop With An Exact Time Lag* by Karim Amrouche from the Faculty of Economics and Management Science of the University of Algiers; and Best Paper Award to *Inverse Optimization, An Efficient Tool For Resource Reallocation: Application in the Farming Sector* by Amar Oukil from the Department of Operations Management and Business Statistics of the Sultan Qaboos University in Oman.

For participants, a drive around the Bay of Algiers showed the modern part of the city built along the Mediterranean seashore as well as the ancient city of the Deys crowned by the Casbah or citadel atop a steep hill. The walking tour along the picturesque lanes and houses of the Casbah allowed visitors to take in the local architecture, artwork and stunning views of the city and bay.

Serigne Gueye, from Senegal and currently with the University of Avignon, France; and Mohamed El-Amine Chergui of USTHB Algiers, along with the organizing and programme committees had put in a lot of effort to bring forth a well-organized conference. Furthermore, the enthusiastic and highly skilled students who showed keen interest in Operational Research and confidence in presenting their work in English made this Conference even more worth experiencing. 🌐

## ‘Pro bono’ OR – example 3

(Continuation of sample studies undertaken through the Pro-Bono OR initiative of the ORS – introduced in IFORS News, December 2014)

## Addressing Loneliness in Rural North Yorkshire

**Sarah Culkin** <sassbril@hotmail.com> UK Department of Health

### The problem:

In the UK, social care can be delivered through either state run organisations or private organisations and charities (also known as the third sector).

A third sector organisation had recently taken over a social care service of visiting and checking up on the isolated elderly in a North of England rural area surrounding the North Yorkshire city of Ripon. Keen to provide as much benefit as possible to the

recipients of the service, the organization requested a pro bono study from the UK OR Society (ORS) to help them improve the service.

### The approach

I was assigned to the task by the ORS and started work by collecting information and evidence through interviews with stakeholders, accompanying the project team on visits to clients, reviewing survey feedback and finance information.



This information was used to produce an initial system diagram. I then facilitated a workshop with key stakeholders to present, discuss, amend and build on the system diagram. Figure 1 shows part of the system diagram, as an example of the output from this research. It shows how users of the service (the isolated elderly) flow into the service, then how they flow through it from initial assessment onwards, and how they may also interact with other neighbouring services, or even leave the service and be referred to a different service instead. It clearly showed how interlinked the service was with other neighbouring organisations, and how there were lots of other organisations that were similar. Along with feedback from interviews, this led to key strands in the strategy map, as shown in Figure 2.

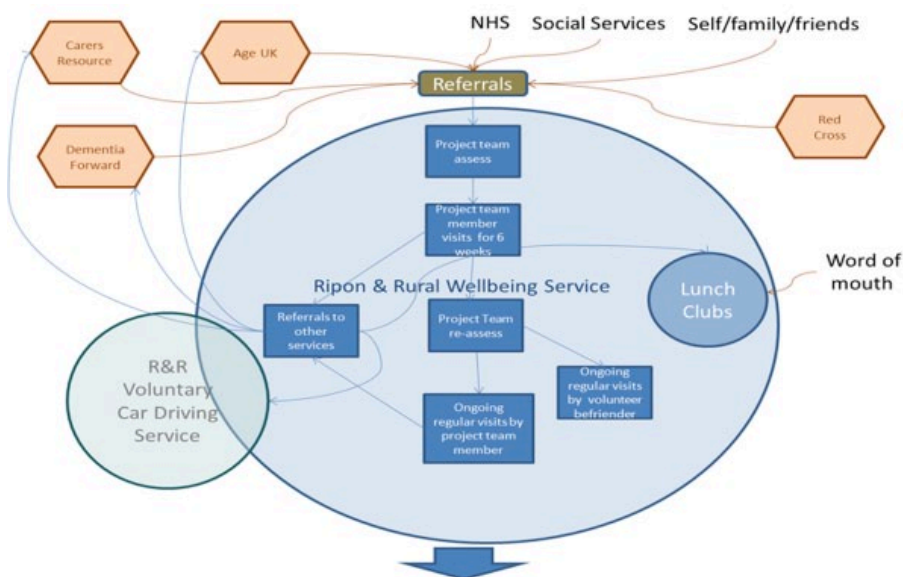


Figure 1. Part of the System Diagram

The system diagram allowed a birds-eye view of the service, helping to see how people flow through the service and how it interacts with other neighbouring services and stakeholder groups.

Back at the office, I reviewed the map and conducted a thematic analysis on all of the interview notes and other textual information. This analysis allowed clarification and quantification of major themes and topics occurring in the information and led to a list of clear recommendations. For example, it showed that volunteers were not being used to good effect, with three staff members mostly doing the visits; and links and communications with other organisations were underdeveloped, leading to a confusion and sometimes duplication of work. Refocussing the work of the permanent members of staff to these areas meant that the service could grow and also be more targeted and efficient; these areas are seen as key strands in the strategy map (Fig. 2).



Figure 2. Strategy mapping of recommendations

A strategy map is useful in showing how your inputs (your capabilities) can transform, through process, into your desired outcomes. The information gleaned from interviews and the system diagram construction, for example, about the significant number of other neighbouring organisations and how interlinked their services were led directly to the strands in the final strategy map (Fig. 2) for 'joint working across services' and 'shared clear vision' so that the service

knew what its specific niche was, and how it fitted in with, but was unique from, other services in the area. As previously



mentioned, it also became clear that volunteers were not being used to full effect, and so this led to the 'community engagement' strand.

From this strategy map, the organisation can construct their own balanced scorecard of measures that can monitor progress and outcomes of the service to ensure maximum benefit.

### The benefits of the study

- Whilst this work was not the most technical of OR projects, its value lay in the fact that it provided the organisation with a clear strategic view of its role and activities, something it never had before.
- As a result of the analysis, the client, project team and analyst all gained a thorough understanding of the service and the wider system of which it is a part.
- A Strategy map for reducing loneliness was identified and evidenced for future use, for example, in tracking: numbers of volunteers used, their contribution to the numbers of visits made, and how well the service works in partnership with neighbouring organisations

- The client was 'taken on the journey', so now understands where strategies come from.
- The work produced a solid foundation from which to re-model the service and apply for associated funding.

At the end of the study the client said: "I'm really pleased with the report and it will be very useful indeed for forward planning and to support our Big Lottery bid" 🌐

## LitORS: Successfully Collaborating with the Global Community

Leonidas Sakalauskas <leonidas.sakalauskas@mii.vu.lt>

It was twenty years ago when the Baltics OR group, composed of Lithuania, Latvia and Estonia, started working closely with EURO and IFORS. The occasion was the *International Conference on Simulation, Gaming, Training and Business Process Reengineering in Operations* held in Riga, Latvia, organised by Yury Merkurjev from Riga Technical University, Latvia, and then EURO President Birger Rapp from Linköping University, Sweden.

With the support of EURO and IFORS, scientists in Lithuania - Rector of Vilnius Gediminas Technical University Edmundas Zavadskas, Leonidas Sakalauskas, Antanas Zilinskas and Gintautas Dzemyda from the Institute of Mathematics and Informatics, Henrikas Pranevicius from Kaunas University of Technology, Vitalijus Denisovas from Klaipėda University together with others established the Lithuanian Operational Research Society (Societ, or LitORS) on June 8, 2001. It then applied for membership and was accepted into IFORS and EURO in 2003.



▲ 2001: EURO Working Group on Financial Modeling participants visit Trakai Castle



▲ 2003: ESI XXI participants amid the great dunes of Neringa.

It is interesting to note that even before the Society was formed, the OR community in Lithuania had actively sponsored the European Working Group meeting on *Multicriteria Aid for Decisions* in October 2000, getting Lithuanian OR specialists together with people known to them only by their scientific publications, such as: Salvatore Greco from Italy, Bernard Roy from Paris, Wilem Brauers from Belgium, Oleg Larichev from Moscow, Yakov Shafransky from Belarus, Roman Slowinski from Poland.

Right after its formation, LitORS kept close relations with EURO Working Groups. The 2001 Workshop of EURO Working Group on *Financial Modelling* was memorable for its plenary lecture on *Lithuania's Monetary and Exchange Rate Policy on the Way to the EuroZone*. On the year of its acceptance into IFORS, LitORS events grew more numerous and included: the International Conference on *Modelling and Simulation of Business Systems* (May), EURO Summer Institute (ESI XXI) *Stochastic and Heuristic Methods in Optimization* (July – August) and the International Conference on *Sustainability Indicators and Intelligent Decisions* (October).

March 2005 marked the first Baltic meeting of Estonian, Latvian, and Lithuanian OR scientists in Vilnius for the *Education for*

*Sustainable Development in the Baltics*. A few months later in May, LitORS was again a co-organizer of the The Workshop of the European Chapter on Metaheuristics (EUME) *Metaheuristics and Large Scale Optimization*.

National Lithuanian OR Conferences were instrumental in involving young researchers in OR and EURO activities. The first such conference was held in May 2006, attracting young researchers from main Lithuanian universities. Later that year in September, LitORS helped organize the fourth Vilnius International Conference *Citizens and Governance for Sustainable Development* which succeeded in fostering the integration of economics, ecology, business management and social policies into an approach towards a sustainable world.

This pace of activity carried on into the next years, with the 2007 Lithuanian National OR Conference and the 2008 EURO Mini Conference on *Continuous Optimization And*

*Knowledge-Based Decisions* organised by LitORS, EURO Working Group on Continuous Optimization, German OR Society, Institute of Mathematics and Informatics, Vilnius Gediminas Technical University. EUROPT-2008 introduced newcomers to the international stage, honored renowned experts, and facilitated the start of several research projects.

In 2009, LitORS joined hands with: the Applied Stochastic Models and Data Analysis International Society (ASMDA) in organizing the International Conference on *Applied Stochastic Models and Data Analysis*; with the EURO Working group on Methodology of Societal Complexity, EURO Working Group on OR for Development, National Commission of Sustainable Development of Lithuania, Vilnius Gediminas Technical University and Institute of Mathematics and Informatics in holding the EURO Mini Conference and the 5th International Vilnius Conference on *Sustainable Development Knowledge-Based Technologies and OR Methodologies for Strategic Decisions of Sustainable Development*.

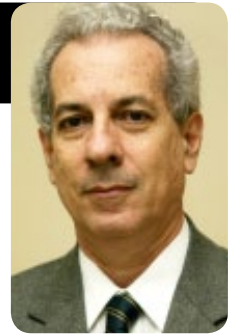


▲ 2008: EUROPT participants in Neringa

The national conferences of 2010 and 2011 were followed by the EURO XXV Conference themed *OR Connecting Sciences*, held from July 8 to 11, 2012, in Vilnius. Other activities included the Special Workshop on Stochastic Programming, and the 10th EUROPT Workshop "Advances in Continuous Optimization".

Indeed, it can be said that for LitORS, OR thrived through the help of the global OR community led by EURO and IFORS. 🌐





## President's Report

Nelson Maculan <maculan@cos.ufrj.br>

A lot happened this year. 2014 marked the IFORS Triennial Conference where we witnessed 2,600 OR professionals from 74 countries get together for six days in Barcelona to present 2,300 papers and listen to four distinguished plenary speakers. This was all made possible through the hard work of past IFORS VP for EURO and Organizing Chair Elena Fernandez along with Scientific Program Chair Stefan Nickel.

Even as everyone got acquainted with or even immersed themselves in the beauty of Barcelona, I could not help but marvel at how IFORS has celebrated 20 such conferences all over the world, in its past 55 years in the service of the OR community. This has been made possible with the various people who have made up the Administrative Committee over the years.

In 2013, the AC started its three-year term focused on an agenda to encourage the establishment of new OR national societies. In 2014, the national society of Mexico became an IFORS member, with three more (Tunisia, Norway, and Nigeria) for acceptance in 2015.

The Board of Representatives meeting held in Barcelona was a chance to meet with you not only to update you on what the AC has done, but also to exchange notes on a more personal basis. The **Regional VPs** continued to make sure that the societies are listened to in the IFORS discussions. EURO VP Elena Fernandez, who did an outstanding job as Triennial Conference Organizing chair, was succeeded by Jacek Blacewicz in keeping IFORS abreast of developments on EURO activities, leadership, and national societies. On the other hand, NORAM, represented by its VP Michel Gendreau, continued to make its strong presence felt through conferences in various areas of OR, sponsorship of awards and publication of journals, books, magazines, on-line information, videos, and other media. ALIO, represented in IFORS by VP Lorena Pradenas, continued to organize conferences with a strong focus on taking care of its early-stage OR professionals. The region actively worked to add more member societies into ALIO. VP Ya-Xiang Yuan saw to it that the **IFORS Distinguished Lecturer and IFORS Tutorial Lectures** are presented in the regional conferences.

Apart from encouraging developing countries to form their OR societies, the **Developing Countries Committee** under Sue

Merchant actively pursued traditional projects such as the International Conference on OR for development (ICORD), the IFORS Prize for OR in Development, and sponsorships of various speakers to the developing world. She tirelessly looked for novel ways by which the Committee could achieve its objectives.

**Publications** continued to earn the revenues, which enabled IFORS to pursue its activities. This year, Publications Chair Graham Rand worked closely with Editors Celso Ribeiro (International Transactions in Operational Research, ITOR) and Preston White (International Abstracts in Operations Research, IAOR) in looking after the administrative concerns facing the publications. In the meantime, the editors continued to look for ways to make these IFORS publications relevant resources for the OR community it serves.

IFORS events and updates were shared in the IFORS major vehicles for communication, the **IFORS website** and the quarterly **IFORS News** headed by Elise del Rosario. These tools continued to provide the communication links to the IFORS membership in particular and to the international OR public in general.

**Treasurer** Peter Bell continued his good work in looking after the IFORS funds. He performed his last Treasurer duties during the scientifically and financially rewarding Barcelona conference, where he also turned over responsibility to an equally competent pair of hands, those of Richard Hartl, who received a warm welcome from his fellow AC members. Dominique de Werra **IFORS Immediate Past President**, as part of overseeing the continuity of programs this year, led the search for the nominees to the position of President and Vice President for the term 2016-2018. Activities for the year received the full administrative support of **IFORS Secretary** Mary Magrogan with assistance from Beth West.

As President, I am grateful to the IFORS team that had made 2014 both meaningful and successful. On behalf of this IFORS AC, I wish to thank you all for the support you had shown to the organization and its activities. 🌐

## Report of the Immediate Past President

Dominique de Werra <dominique.dewerra@epfl.ch>

An important task of the Immediate Past President (IPP) is to step down smoothly after having forwarded a collection of recommendations and suggestions to the new Administrative Committee. But the most visible job of a vanishing IPP is to help prepare the immediate future of the Federation. IFORS rules state that a Committee of the three most recent living past Presidents has to nominate candidates for the positions of President and Vice President.

Such a committee called the TOP (Three Old Presidents) Club, composed of Tom Magnanti, Elise del Rosario and yours truly was formed and presented the nominees to the Board of Representatives meeting last July in Barcelona. The nominees were Michael Trick (former IFORS Vice President representing NORAM) for President and Luciana Buriol (from Brazil, President of ALIO) for Vice President.

The national societies were given until the end of December 2014 to put forward their nominees but no additional nominations were received.

The IPP also had several opportunities to provide some guidance to AC members in a few ongoing activities. At this point, I would like to thank the present AC for continuing to serve IFORS with much enthusiasm and dedication. At the same time, on behalf of the TOP Club, I wish to express gratitude to the incoming IFORS President and Vice President for their willingness to take on the responsibility of promoting OR throughout the world through IFORS. 🌐





## Report of the Treasurer

**Peter Bell** <pbell@ivey.ca>



The 2014 budget (approved by the IFORS AC in Rome) showed an operating surplus of \$70,475 although the financial result was recognized to be heavily dependent on the success of the Barcelona conference. As it turned out, the Barcelona conference was an outstanding success for IFORS both scientifically and financially leading to a 2014 annual surplus for IFORS of \$230,551 that recovered the IFORS operating deficits over the last few years. What follows is a summary of the unaudited results for 2014 (all numbers in \$US).

We continue to see strong revenues from our publications with IAOR and ITOR cash receipts totaling about \$145,000 which was above budget (\$129,000): the variation resulted from the fact that these payments originate in £ and are converted to US\$ into our accounts and so are subject to exchange rate variations.

2014 members' dues collections (\$21,460) were also above budget (\$20,000) as a result of continued diligent efforts by Mary Magrogan to minimize past due accounts. Interest revenue continued to decline following the general global downturn in rates that has reduced the interest rate we receive on our reserves: in 2008 we received interest of \$27,280 but by 2012 this had declined to \$2,443 even though IFORS' reserves had increased. 2014 interest receipts are not yet final but are estimated to be a little below last year (\$2,434 vs. \$2,180). The net effect was that IFORS revenues from ongoing activities (about \$171,844) were almost identical to 2013 (\$171,323) and above budget (\$151,500). After adding in the IFORS management fee from the Barcelona conference (\$270,127), 2014 IFORS total Income was \$441,971.

2014 spending (\$211,421) shows an increase from 2013 as a result of costs associated with the extra activities that go along with the triennial conference but was still below budget. Most recurring line items were close to budget but administrative committee expenses exceeded budget (\$18,468 vs. \$12,000) as a result of additional travel to Barcelona. The Education and Developing Countries committees did not spend their full budgets.

We budgeted for a surplus of \$70,475 and ended December with a positive operating result of \$230,550. The audited statements that will be available in April will be slightly different as a result of the way that the auditor handles accruals.

The 2015 budget (approved by the IFORS AC in Rome) shows an operating deficit of almost \$40,000. For most of IFORS history, the profits from the Triennial conference have been used to cover annual operating deficits in recurring items and it appears that this will be the case going forward.

On balance, 2014 did not materially change IFORS' financial strength. We have a very conservative investment strategy with our reserves in US dollars and so the value of our

assets in other currencies increases and decreases with the \$US exchange rate: since we cannot predict future exchange rates we do not try. Prospects for the future seem sound.

In view of the Society's financial position and prospects, no change in member society dues is recommended at this time.

This will be my last IFORS Treasurer's report. I thank Mary Magrogan and her staff at the Secretariat for all their help over the years with the accounts and the handling of payments and receipts and wish new Treasurer Richard Hartl every success.🌐

### IFORS Financials (in US Dollars)

	2013	2014	
	Actual Audited	Budget	Actuals Unaudited
<b>INCOME</b>			
Member Society Dues	21,655	20,000	21,460
Royalties IAOR	78,372	74,000	78,754
ITOR	66,784	55,000	66,540
Interest	2,434	2,500	2,178
Conferences - Barcelona 2014		144,000	270,127
Special Conferences	2,078		2,912
<b>TOTAL INCOME</b>	<b>171,323</b>	<b>295,500</b>	<b>441,971</b>
<b>EXPENSES</b>			
Triennial - Barcelona 14	13,879	20,000	
Quebec City 17		2,000	18,739
Activities			
Administrative Committee	16,376	12,000	18,468
Publications IAOR Editor	55,286	34,500	34,500
ITOR Editor		21,000	20,313
Scientific Activities & External Affairs			
IDL, ITL, Fellowships, & Grants	17,545	5,000	7,243
IFORS Website	4,065	8,500	3,350
Education Committee		7,500	
Meetings - Program IFORS 2014	205	5,000	5,801
ITOR Subscriptions	20,525	20,525	20,525
IFORS Newsletter	7,789	9,000	5,738
Developing Countries Committee	17,261	26,000	22,165
General Business Operations			
Office & Secretary	47,880	47,000	49,629
Auditor	2,591	3,000	3,238
Banking	1,259	1,500	1,712
Contingency		2,500	
Exchange difference	365		
<b>TOTAL EXPENSES</b>	<b>205,026</b>	<b>225,025</b>	<b>211,421</b>
<b>OPERATING RESULT</b>	<b>-33,703</b>	<b>70,475</b>	<b>230,550</b>

## Report of the IFORS VP at large and Chair, Developing Countries Committee

**Sue Merchant** <suemerchant@hotmail.com>



The Developing Countries Committee (DCC) comprising members Elise del Rosario (Philippines), Adam Ouorou (France/Benin), Yindong Shen (China) and Theo Stewart (South Africa) continued its work of trying to support OR in developing countries and development work in a range of ways. It set up a >>

>> Consultative Group of OR people from around the world to help guide its decisions: results from the first consultation exercise are currently being analysed- thanks to all those who responded so helpfully and indeed to DCC members for all their support.


In 2014 the DCC organised or assisted with the following events/activities:

- **ICORD 2014 Lleida, Spain.** 25 people attended from 17 different countries. As usual at these intimate conferences, each paper presented was constructively criticised by a nominated 'reactor' to help the individual improve the work and presentation. Gilberto Montibeller, from the London School of Economics, lectured to the group, and ran a workshop (on Facilitated Decision Aiding for supporting Policy Making in developing countries), which was well received by the delegates. Feedback from the conference was positive and the networking opportunities were particularly appreciated. Thanks are due to all delegates for their enthusiastic participation and especially to organisers Lluís Miguel Pla Aragones, Elise del Rosario, and Youssef Masmoudi.
- The **IFORS Prize competition** for OR in development was run at the triennial IFORS conference in Barcelona. Eight finalist teams were selected to present to the team of judges (see article in IFORS News March 2014 for details of competitors, papers, and judges). The winning team was from Brazil (Luiz de Andrade and Claudio Barbieri da Cunha) and their excellent paper described how ambulance cover in Sao Paulo was optimised. The runners up were Zheng Yu-Jun, Ling Hai-Feng, Xu Xin-Li and Chen Sheng-Yong from China for their paper on emergency engineering rescue scheduling in disaster relief situations. The DCC and IFORS were most grateful to all competitors for submitting their impressive work, especially as English was not the first language of most, and we thank all the judges (especially the chair, Andres Weintraub) for their very hard work in sifting applications and judging the presentations.
- Encouragement was given to a number of national **OR**

**societies to join IFORS**, including Nigeria, which has applied for membership and now awaiting the outcome of the ballot process. In this context, Nelson Maculan, IFORS President, and I very much enjoyed meeting the President of INFORN (the Nigerian OR Society) in Barcelona and sharing experiences of OR societies with him.

- The **Developing Countries resources website** continues to evolve, thanks to the efforts of many interested individuals throughout the world, especially Gerhard Wilhelm Weber and his wide range of contacts who provide many articles on issues connected with development for the site. Google analytics was used this year to try to understand better how the site is used and by whom with a view to improving it. This work is ongoing, ably assisted by Ruel Tan (the web editor) and by Sadia Samar Ali in India. Discussions with Palgrave Macmillan continued and resulted in the firm providing access to International Abstracts in OR through the site for those societies which subscribe to IAOR and those which are members of the INASP scheme (which provides free access to some institutions in developing countries). Details of how to join the scheme are placed on the website and at least one institution I am aware of is currently applying to join, which should help many students at that university.

Steps were also taken on the following activities scheduled after 2014:

- Supporting two speakers to attend the OR Practice in Africa conference in Algiers in April 2015;
- Assisting the EURO Working Group Workshop for developing countries immediately prior to EURO2015 in Glasgow in July 2015;
- Preparing for ICORD 2015 in Sri Lanka in December
- Finalising plans for ICORD 2016 in Mexico;
- Discussing the idea of a Teachers' conference in South Africa in spring 2016; and
- Exploring addition of open source OR software links to the DC on line resources. 

## Report of the VP representing ALIO

**Lorena Pradenas Rojas** <lpradena@udec.cl>

Big and important OR events were organized in 2014 by the operations research societies within ALIO (<http://www-2.dc.uba.ar/alio/eventos.htm>).

During the CLAIO2014 ALIO business meeting, the following ALIO officers were elected for the 2014-2016 term of office: President - José Luis González Velarde (Mexico); Vice President - Héctor Cancela (Uruguay); Vice-president for events - Rosiane de Freitas (Brazil); and Secretary - Jorge Vera (Chile). Lorena Pradenas Rojas, elected for four years in CLAIO 2012, continues her term as Vice-president for IFORS. It was also decided that the following CLAIO would be held in Santiago in 2016 and in Peru in 2018. This meeting was attended by: Irene Loiseau (via Skype) from Argentina; Carolina Mota from Brazil; Jaime Miranda from Chile; Sira Allende from Cuba; Elena Fernández from Spain, representing Joaquín Sicilia; Juan Carlos Leyva López from Mexico; David Santos from Peru; José Soeiro Ferreira from Portugal; and Héctor Cancela from Uruguay. Also in attendance were special guests IFORS President Nelson Maculan and Colombian Society representative Juan Villegas.

Two new ALIO society applications were announced during the meeting. The application of the Ecuadorian Mathematics Society, which is made up of 135 members with 40 in the field of OR, will be decided on by the president/representative of each society by April, 2015. The second is the Colombian national society, ASOCIO, incorporated on October 3, 2014 in the city of Medellín, consisting of 38 people and 26 institutions.



**ELAVIO2014** (<http://www-2.dc.uba.ar/alio>). The Ibero-American Latin Operations Research Schools are traditional successful events held by ALIO. In 2014, the school was held in Paraíba (Brazil) from February 14-21 with over 70 students from about 13 countries participating. It was sponsored by CNPQ (Brazil), CAPES (Brazil) and FAPESQ (*Fundação de Apoio à Pesquisa do Estado da Paraíba*), ALIO and IFORS. Chaired by Lucidio dos Anjos Formiga Cabral of the Universidade Federal da Paraíba, the school featured 12 tutorials in different areas of OR with exhibitors from Brazil, Venezuela, Spain, New Zealand, France, Colombia, among others. Of the 69 student participants, 63 received accommodation and support for living expenses. Oscar C. Vásquez, Ph.D student at Université Pierre et Marie Curie France, was awarded the travel expense scholarship by IFORS.

**XVII CLAIO** took place in Monterrey, México in October 6 to 10, 2014. There were 424 registered participants, of which 244 were from Mexico, 51 from Brazil, 36 from both Chile and Colombia, 13 from USA, 8 from Peru, 6 from Argentina, 5 from Spain, 4 from Ecuador, 3 each from Cuba and Uruguay, 2 each from France, Italy, Poland, and Serbia, and a participant each from Canada, Greece, Portugal, Turkey, UK, and Venezuela.

Plenary talks were given by Carlos A. Coello from México, Jonathan Bard from USA, Hector Cancela from Uruguay and Elena Fernández from Spain. >>

>> Sheldon M. Ross from the University of Southern California, USA gave the IFORS Distinguished Lecture. Five tutorials were conducted by Andrés Weintraub from Chile, Ignacio Grossmann and José Holguín from USA, Paolo Toth from Italy and Rubén Ruiz from Spain. Four short courses were delivered by Angélica Lozano from Universidad Nacional Autónoma de México, Cristina Gígola from Instituto Tecnológico Autónoma de México, Eduardo Fernández from Universidad Autónoma de Sinaloa, and Juan Díaz from Universidad de Las Américas.

The final academic program consisted of 241 registered works, selected from submissions of 95 full papers and 310 abstracts from 19 countries. Presenters were invited to submit their full papers for publication in a special edition of Annals of Operations Research.

Satellite events organized in conjunction with the ALIO-SMIO meeting were: the 7th Meeting of the Iberian-American Network on Multi-Criteria Decision Analysis (RED-M); and the cluster session on Soft Computing and Hybrid Systems organized by the Eureka International Network. Several other special events were also held during the conference.

**VIII ALIO/EURO.** Workshop on Applied Combinatorial Optimization (<http://www.fing.edu.uy/en/alio-euro-2014>) was held from December 8-10 at the Faculty of Engineering of Universidad de la República, Montevideo, Uruguay where three lecturers were featured and 100 presentations made. Antonio Mouttone chaired the event.

**XLV SBPO.** (<http://www.sobrapo.org.br/sbpo2014/certs/>). XLVI SBPO – Simpósio Brasileiro de Pesquisa Operacional, was held from September 16 to 19 at Salvador (BA), organized by SOBRAPO (<http://www.sobrapo.org.br/>) and the Universidad Federal de Rio Grande do Norte (<http://www.sistemas.ufrn.br/portal/PT/>). Coordinated by Mariana Rodrigues and Luciano Ferreira from Almeida (both of UFRN- BR), the symposium offered the 550 undergraduate and postgraduate researchers


and teachers the whole range of 4 conferences, 4 tutorial courses and paper presentations organized for them.

**COLOQUIOS/ICHIO** ([www.ichio.cl](http://www.ichio.cl)). For 2014, the Chilean Society of Operations Research conducted four seminars in different universities and cities of Talca, Valparaíso, Antofagasta and Santiago, each participated in by more than 60 undergraduate and graduate students.

**42 JAIIO** (<http://43jaiio.sadio.org.ar/>). Argentine Annual Conference on Computer and Operations Research took place on September 1-5. The conference was organized by SADIO (<http://www.sadio.org.ar/>) and the Faculty of Engineering of the University of Palermo (<http://www.palermo.edu/ingenieria/>) and coordinated by Flavia Bonomo, Department of Computer Science, FCEN, University of Buenos Aires and Uriel Cukierman, Faculty of Engineering, University of Palermo.

## Report of the Chair, Education Initiatives

OR teaching occurs in all countries that participate in IFORS activities worldwide. An important part of this education is provided directly through the lectures and tutorials and in summer and winter schools conducted in the various annual or biannual events organized by the national societies. Massive participation of undergraduate and postgraduate students as well as teachers is consistently observed in these activities. Motivation for an even greater participation is given through prizes given for best undergraduate and postgraduate thesis.

IFORS has a large set of tools to support OR Education in its online Education Resources ([http://ifors.org/wiki/index.php?title=Main\\_Page](http://ifors.org/wiki/index.php?title=Main_Page)). Consistently, it receives contributions and new materials from different OR societies. OR workers who wish to share their learning and contribution to support the teaching and learning of OR are invited to submit their contributions at this site. 

## Report of the VP representing APORS

Yuan Ya-xiang <[yyx@lsec.cc.ac.cn](mailto:yyx@lsec.cc.ac.cn)>

APORS activities for 2014 concentrated mainly on preparing for the triennial APORS 2015 to be held in Sarawak, Malaysia. It will be hosted by the Management Science/Operational Research Society of Malaysia (MSORSM). The Executive Committee met during the Barcelona conference, where intensive marketing was done for the Conference. Initial steps were taken to arrange for the selection of the 2018 APORS Conference. Bids to host the conference had been received from the Operations Research Society of the Philippines (ORSP) and the Operations Research Society of Nepal (ORSN).

in statistics and applied probability. He is a Fellow of the Institute of Mathematical Statistics, and a recipient of the Humboldt US Senior Scientist Award.



Lyn Thomas has been Professor of Management Science at the University of Southampton since 2000. He was Professor of Management Science at the University of Edinburgh and served as President of the Operational Research Society. Among other accomplishments, Thomas is a fellow of the Royal Society of Edinburgh.

## Report of the Chair, IFORS Distinguished Lecture (IDL)

Two IDLs were selected for 2014 during the ALIO-SMIO Joint Conference Monterrey, Mexico, October 2014 and during the INFORMS Conference San Francisco, USA on November 2014.

Sheldon Ross is professor in the Department of Industrial Engineering and Operations Research at the University of Southern California. He has published numerous technical articles and textbooks

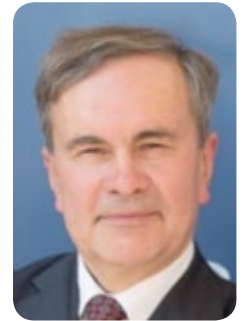


▲ IFORS President Nelson Maculan shown awarding IFORS Distinguished Lecturers plaques to Sheldon Ross (left photo) and Lyn Thomas (right photo)



## Report of the VP representing EURO

Jacek Blazewicz <jblazewicz@cs.put.poznan.pl>



**EURO, The Association of European Operational Research Societies**, [www.euro-online.org](http://www.euro-online.org), is a regional grouping within IFORS. At present, it has 30 member societies. EURO is regulated by a Council consisting of representatives of all its members and an Executive Committee, which constitutes its board of directors. The 2014 Executive Committee of EURO was composed of President Gerhard Wäscher (Germany), President Elect Elena Fernández (Spain), VP1 Sally Brailsford (United Kingdom), VP2 José Fernando Oliveira (Portugal), VP3 (position introduced in 2014) Silvano Martello (Italy), Secretary Jesper Larsen (Denmark), and treasurer Marino Widmer (Switzerland). EURO Manager is Sarah Fores (United Kingdom), Webmaster Bernard Fortz (Belgium) and Website Editor and Administrator Marie-France Rogge (Belgium). In addition, IFORS Vice-President for EURO – Jacek Blazewicz (Poland) is responsible for the links between EURO and IFORS.

In 2014, no EURO Congress was organized in favor of the IFORS Barcelona Conference held July 13-18. During this conference, *EURO Awards for the Best EJOR Paper* were given to Wouter Verbeke, Karel Dejaeger, David Martens, Joon Hur, Bart Baesens in the category *Innovative Applications of OR*; to Colin Paterson, Gudrun Kiesmüller, Ruud Teunter, Kevin Glazebrook in the category of *Surveys* and to Rafay Ishfaq, Charles R. Sox in the category *Theory and Methodology*. Winners of the *ROADEF/EURO Challenge 2014* were announced during the closing session of the IFORS conference. Launched in July 2013, the challenge was proposed by SNCF with the objective of managing rail stock units in large railway sites. The winners were: Mirsad Buljubasić, Haris Gavranović, Said Hanafi and Michel Vasquez.

In addition to the annual conference (either at EURO or IFORS), EURO Mini-Conferences are organized. The XXX EURO Mini-Conference *Optimization in the Natural Sciences* (MEC XXX) was hosted by the University of Aveiro, Portugal (February 5-9, 2014). Its 100 participants represented four continents. Additionally, The XXXII EURO Mini-Conference on *Stochastic Programming and Energy Applications* was held in Paris (September 24-26, 2014) with 40 participants.

On the other hand, a pretty high number of smaller workshops took place, associated with the activity of various EURO working groups, e.g., the Workshop of *EURO EWG on Computational Biology, Bioinformatics and Medicine*, held in Biedrusko (near Poznan) from June 26 to 28, 2014, with around 80 participants from all over the world, including the USA, South America and India.

2014 also witnessed significant developments in the EURO journals. The European Journal of Operational Research (EJOR) kept its ranking among the best OR journals in Thomson Reuters' JCR. Three new EURO journals: EURO Journal on Computational Optimization (EJCO); EURO Journal on Decision Processes (EJDP); and EURO Journal on Transportation and Logistics (EJTL) were published regularly and continue to receive an increasing number of submissions, while the EURO e-newsletter continues to be a success.

There are 28 working groups in EURO (EWGs) which cover different areas within OR. The EWGs meet regularly during the EURO-k Conferences and, possibly, during other events, where thematic streams are organized. These meetings are all supported by EURO.

The EURO PhD School (EPS) is an educational instrument created

by EURO in 2013 to encourage the organization of post-graduate education initiatives for PhD students under a school format. The first EURO PhD School, devoted to *Multicriteria Decision Making with Mathematical Programming* (EPS on MCDM with MP), was held in the Faculty of Mathematical Sciences of the Complutense University of Madrid from February 17 to 28.

The series of EURO Summer and Winter Institutes (ESWIs) was launched in 1984. The basic idea is to gather around 25 early stage researchers for about two weeks to present their material, discuss with others and a handful of specially invited senior experts in the field, prepare a paper to be considered for inclusion in a future issue of an OR publication. In 2014 two ESI were organized: ESI XXXI *Operational Research Applied to Health in a Modern World* in Fortress Bard, Italy from June 11 to 20; and ESI XXX *OR in Agriculture and Agri-food Industry* organized in Lleida, Spain from July 19 to August 1.

During the year, some important decisions were made. In order to promote and further develop international cooperation, EURO will (co-) organize and support joint conferences with national OR Societies outside Europe and other regional bodies within IFORS. Significant financial support can be made available for the organization of such events (other than EURO-k Conferences). On the other hand, EURO will support international meetings on relevant OR topics held in one of its member countries by sponsoring a plenary presentation (The EURO Plenary) of an internationally renowned operations researcher (scientist or practitioner) from a EURO member country.

Finally, Poznan (Poland) was selected to host EURO XXVIII to be held in July 3-6, 2016.

## Report of the Chair, Meetings

The three-year preparation time for IFORS 2014 resulted in over 2600 registered participants from 74 countries, 2300 accepted abstracts, four top-level plenary speakers and 630 parallel sessions grouped in nearly 160 streams, thanks to Scientific Program Chair Stefan Nickel. The local organizing committee ensured a smooth registration and complete information for the conference participants who were all accommodated at the conference venue, the *Centre de Convencions Internacional de Barcelona*. Organizing Committee Chair Elena Fernandez created a conducive atmosphere for learning not only about OR but also about Barcelona. The social program set a new standard for IFORS conferences.

Another three-year preparation time unfolds with IFORS 2017 Triennial Conference to be held in Quebec City, Canada July 17-21. The organizing committee consists of Irene Abi-Zeid, Bernard Gendron and Angel Ruiz. During the summer of 2014, the budget was updated, preparations were made for promotional material, an application for support from Quebec Tourism office was submitted and the contract was signed for the Quebec convention center. Maria Grazia Speranza was appointed Program Chair.

The Call for Host Societies for the IFORS 2020 Triennial Conference was sent to the Society Representatives in August 2014. Following the statutes, the Administrative Committee will review received proposals in 2015. 🌐

## Report of the VP representing NORAM

Michel Gendreau <michel.gendreau@cirrelet.net>

The North American Operations Research Societies (NORAM) is made up of two organizations: the Canadian Operations Research Society (CORS) and the Institute for Operations Research and the Management Sciences (INFORMS). Both societies were created to promote the advancement of knowledge, as well as interest and education in operations research.

**2014 CORS ACTIVITIES.** Established in 1958, the Canadian Operational Research Society (CORS), is the leading scientific and professional society for operational research (OR) in Canada. CORS publishes a journal and Bulletin, a newsletter that reports society's activities quarterly. CORS provides funds for student travel to its annual conferences. It also supports local section activities and encourages members with common interest in an area within or related to operational research to form a CORS Special Interest Group (SIG). SIGs in Queueing Theory, Health Care Operational Research, and Forestry have been organized.

**Awards.** The 2014 *Harold Lardner Prize* was awarded to Jonathan Rosenhead, Emeritus Professor of Operational Research at the London School of Economics and Political Science. The 2014 recipient of the *Omond Solandt Award* was IBM. The 2014 *Award of Merit* recipient was Pierre L'Ecuyer at Université de Montréal, and the 2014 *Service Award* went to Diane Bischak at University of Calgary. Finally, the *CORS Practice Prize* was awarded to Fletcher Lu and Craig Trought at the University of Ontario Institute of Technology.

**Meetings.** The 56th Annual Conference of the Canadian Operational Research Society (CORS 2014) was held in Ottawa from May 26 to 28.

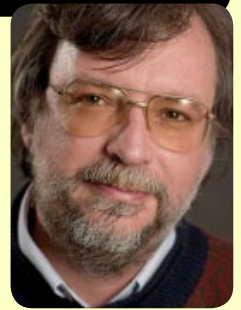
**Publications.** CORS publishes the quarterly journal *INFOR (Information Systems and Operational Research)*. The importance of combining IS and OR in one journal is that both aim to expand quantitative scientific approaches to management. The integration of these two subjects also enhances the applied orientation of INFOR, since its concepts are used in the practical implementation of OR models.

**2014 INFORMS ACTIVITIES.** INFORMS holds two major conferences each year: the Annual Meeting in Fall, which is mainly oriented towards academics, and the Analytics Conference in Spring for practitioners. INFORMS publishes 13 scholarly, peer-reviewed, journals, including the flagship journals *Operations Research* and *Management Science*, and an open-access journal *INFORMS Transactions on Education*. A new INFORMS journal, *Strategy Science*, will begin publication in 2015. INFORMS also publishes a tutorial and book series. Other programs include a speakers program, a high-school teachers' program, and a doctoral colloquium and young practitioners' workshop. Currently, INFORMS is divided into 11 societies, 22 sections, 5 fora (interest groups that are neither discipline or

geographical), 32 regional chapters, and more than 80 student chapters, each of which holds meetings and substantially contribute to the content of the national meeting.

**Awards.** The following awards and their recipients for 2014 follows: *Doing Good with Good OR - Student Paper Competition* Eoin O'Mahony, Cornell University; *Daniel H. Wagner Prize for Excellence in Operations Research Practice* jointly awarded to David Simchi-Levi and Peter Y. Zhang, Massachusetts Institute of Technology, William Schmidt, Cornell University, Yehua Wei, Duke University, and Oleg Gusikhin, Don Zhang, Yao Ge, Keith Combs, and Michael Sanders, Ford Motor Company; *George B. Dantzig Dissertation Prize* Santiago Balseiro, Duke University; *George E. Kimball Medal* Terry P. Harrison, Penn State University; *George Nicholson Student Paper Prize* Daniel Russo, Stanford University; *Saul Gass Expository Writing Prize* Stephen P. Boyd, Stanford University; *Impact Prize* Brenda Dietrich, IBM T.J. Watson Research Center, JP Fasano, John Forrest, Laszlo Ladanyi, and Robin Lougee, IBM, Lou Hafer, Simon Fraser University, Brady Hunsaker, Google, Theodore K. Ralphs, Lehigh University, and Matthew Saltzman, Clemson University; *INFORMS President's Award* András Prékopa, Rutgers University; *INFORMS Prize Mayo Clinic; Prize for the Teaching of the OR/MS Practice* Jason Merrick, Virginia Commonwealth University; *Judith Liebman Award* Kimia Ghobadi, University of Toronto Student Chapter, Ruixue Guo, Stanford University Student Chapter, and Michelle McGaha Alvarado, Texas A&M University Student Chapter; *Moving Spirit Award for Chapters* Jennifer Leong, Maryland Chapter, *Moving Spirit Award for Fora* Laura A. McLay, Virginia Commonwealth University; *INFORMS Undergraduate Operations Research Prize* Hongfan Chen, Georgia Tech; *John von Neumann Theory Prize* Nimrod Megiddo, IBM; *UPS George D. Smith Prize* Sauder School of Business, University of British Columbia - Center for Operations Excellence; and *Franz Edelman Award for the Achievement in Operations Research and the Management Sciences* Syngenta. Inducted as INFORMS Fellows in 2014 were: Michel Balinski (CNRS and Ecole Polytechnique), Jonathan Eckstein (Rutgers University), Terry P. Harrison (Pennsylvania State University), Robert R. Inman (General Motors), Radhika Kulkarni (SAS Institute, Inc.), Russell P. Labe, Jr. (Bank of America), Steve Nahmias (Santa Clara University), Robert L. Phillips (Columbia University), Tuomas Sandholm (Carnegie Mellon University), J. George Shanthikumar (Purdue University), and Candance A. Yano (University of California, Berkeley).

**Meetings.** The two major meetings of INFORMS during 2014 were the 2014 INFORMS Conference on Business Analytics and Operations Research held March 30-April 1 in Boston, Massachusetts, and the INFORMS Annual Meeting in San Francisco, California on November 9-12. INFORMS held a number of Community conferences, including the 2014 Optimization Society Conference from March 6 to 8 in Houston, Texas. 🌐



## Report of the Chair, Publications

Graham Rand <g.rand@lancaster.ac.uk>

The journals published by IFORS are an important component of what we offer the worldwide OR community. They raise IFORS' profile amongst researchers and authors. They also provide an important revenue stream to enable IFORS to undertake a wide range of activities. Each generates, with the publisher (IAOR, published by Palgrave, and ITOR, published by Wiley), a profit share. IFORS received from each journal, a net benefit of \$45,000 in 2014, based on the 2013 financial year. In each case, the benefit in 2015, based on the 2014 financial year, will be lower.



## International Abstracts in Operations Research (IAOR)

K. Preston White, Jr. continues to edit IAOR, with the support of associate editor Peter Whitehead. Our contact at Palgrave, Guy Edwards, is leaving at the end of February 2015. The 2014 issues were published on schedule, and contained 4011 abstracts: the target is 4000 abstracts, 500 per issue. IFORS' thanks are due to the editors for the great job they are doing. The 13,000th abstract will be published in the second issue of 2015.

A total of 4131 abstracts are backlogged as metadata awaiting selection and classification, down from 8034 six months ago. Six journals represent almost 85% of the backlog (3474 abstracts). Reduction of the backlog reflects the culling of abstracts inappropriate for IAOR, an effort enabled by significant improvements in the editing functionality of the Electronic Work Bench (EWB) achieved over the past year. The improvements to the Editorial Workbench were rolled out in the second half of 2014. These have greatly improved the functionality for the IAOR Editors and have increased speed and efficiency in processing abstracts. However, some technical issues remain and these are a priority for investigation and improvement in the early months of 2015.

Web traffic to IAOR content in 2014 fell from 2013. Improving visibility of the product remains a priority for 2015 and plans are in place to reach out to national associations. IFORS' member societies with a member-only section on their website are encouraged to consider providing access to IAOR at a low cost per member. Please contact me at g.rand@lancaster.ac.uk to discuss this.

## International Transactions in Operations Research (ITOR)

Celso Ribeiro continues to do an excellent job as editor of ITORE. Graham Russel, Journals Development Editor, is our contact at Wiley-Blackwell. All issues were published ahead of schedule in 2014. Papers published by year have increased from 25 (2006) to 50 (2014), and pages printed by year from 584 (2006) to 1062 (2014). Full text downloads increased by 30% from 2011 (36,133 downloads) to 2013 (46,799 downloads), though after several years of strong growth this was actually 140 downloads fewer overall than the total for 2012.

ITOR truly is an international journal, with an editorial board of 56 editors from 22 countries. The number of submissions continues to increase (from 68 in 2007 to 361 in 2014, which have come


from 61 countries. The average time to first decision is 62 days. The average acceptance ratio in the period 2007-2014 is just over 20%. Eight special issues are in preparation: Matheuristics, Decision Support Systems, Cutting and Packing, Improving Healthcare, Many Faces of Distances, Applied Combinatorial Optimization, Variable Neighborhood Search, and Applications.

The impact factor for 2013, reported in 2014, dropped a little from 0.588 to 0.481. This placed ITORE at 70th in the ranking for Operations Research & Management Science journals, ex 79. This issue is being addressed by the Editor and the Editorial Board.

Although for previous IFORS conferences participants received a subscription to ITORE as part of their conference fee, for the 2014 Barcelona conference it was decided by the AC not to continue this arrangement.

As an alternative, Barcelona delegates will be "opted in" to receive the ITORE alerts (being able to opt out later if they wish). Wiley-Blackwell contacted those who were subscribers as a result of being at the Melbourne conference to encourage them to continue their subscription.

We have been informed about a new purchasing option that Wiley-Blackwell plans to make available to institutional library customers from 2016. In this new purchasing option, customers buy access to the complete Collection of Wiley-published journals, including journals new to Wiley and new subscription-journal launches. There is therefore no need to reconcile, cancel or swap individual titles. The fee to the customer in the first year is based on their current expenditure. Price increases will then be agreed across the rest of the term, as per current licensing arrangements.

This new model will not replace other purchasing options. It will run alongside the range of options Wiley-Blackwell offers already for purchasing journals as part of Collections or as individual titles. It is envisaged that this new option will help to ensure stable revenues from challenged markets, for IFORS and Wiley. Individual journals' share of revenue from customers taking the new model will be allocated proportionate to their existing revenues from the same customers. This means that ITORE's revenue from customers who choose the new option will grow at the same rate that Wiley's total revenue from these customers grows. 

## Report of the Chair, IFORS website and IFORS News

Elise del Rosario <elise.del.rosario@stepforward.ph>

Aiming to keep the OR international community abreast of OR issues and events in various parts of the world, **IFORS News** continued to publish quarterly electronic issues for 2014. Hardcopies of the March issue (containing the 2013 IFORS Annual Report) were also distributed to the members and participants of IFORS XX.

During the year, *Sue Merchant* and *John Ranyard* showed a wide array of OR applications at New Zealand Post, National Copper Corporation of Chile, Herra Comm in Italy and Legazpi City in the Philippines, for the column **OR Impact**. *Arabinda Tripathy's OR for Development* gave readers interested in the promotion and practice of OR in developing countries an update of the ICORDs, the IFORS Prize as well as an article on OR approaches for developing countries. The **Tutorials** contributed to readers' knowledge of tournament scheduling, OR consulting, remote sensing, and how to get started in Pro Bono OR. Meanwhile for the **Editorial**, Lorena Pradenas and Peter Bell dealt with evolving approaches in OR and the future of OR with analytics, respectively. *Hans Iltmann* kept readers updated on what's hot: Humanitarian and Relief Logistics, Analytics Across the Enterprise, Encyclopedia of OR and MS, and The Roots of Logistics in his **Book Reviews**. OR events all over the world were reported in **Conferences**, with a special coverage of the IFORS XX. Some IFORS correspondents who made to this conference had the chance to share a dinner. More and more societies are heeding the call to submit their societies' representatives to the IFORS News. We continue to count on them for many things, including the **OR Society in Focus**, which for 2014 featured our Polish, Greek and Mexican OR society members.

The IFORS News continued to be distributed through the **IFORS website**. As in the preceding year, the website hosted the On Line resources of the Education and the Developing Countries Committees. In 2014, materials were uploaded and innovations introduced to these on line resource sections. Administratively, the website continued to lend support to inquiries and information requested by members. The website continued to offer a convenient way for members to vote on matters brought before them. Member details and website accounts of new members were added during the year. These were all achieved with the help of Webmaster Ruel Tan, who was instrumental in creating and maintaining microsites such as the ones used for the ICORDs. 